MODIS Technical Team Meeting
Thursday, July 26, 2001
3:00 PM

Vince Salomonson chaired the meeting. Present were Bob Murphy, Dorothy Hall, Skip Reber, Gary Alcott, Mike Roberto, Bill Barnes, Jack Xiong, Ed Masuoka, Eric Vermote, Barbara Conboy, and Bruce Ramsay, with Rebecca Lindsey taking the minutes.

1.0 Schedule of Upcoming Events

- ESIP Federation Meeting — July 24-26, 2001
  University of North Dakota, Grand Forks
- MODIS Science Team Meeting — September 24-26, 2001
  Location: BWI Marriott

2.0 Meeting Minutes

2.1 Instrument Update

PFM

Roberto reported that the results of an independent study on the MODIS shutdown event conducted by Mitch Davis and others would be presented on Monday, in Building 32, at 1:00 p.m. Roberto said that the report should confirm that the failure wasn't consistent with any electronic components except the MOSFET (a high power switch). The team wasn't sure initially whether the shutdown was due to an over-voltage or over-current, but now they believe it was an over-voltage shutdown. The presentation should provide results of bread boarding tests, as well as results from p-spice electrical modeling.

The team is expected to conclude the following. There was no sign of an overstress condition. The shutdown was most likely caused by a high-energy radiation event that hit the down-regulator MOSFET. Other portions of the power supply failing and possible load failures were considered and ruled unlikely. Command Processor B and other loads are likely OK. Roberto thinks it will be a science decision whether to switch back to B-side. Another important conclusion is that they believe we have basically lost the B-side power supply.

Salomonson indicated that initially, at least, he is disposed to stick with the instrument configuration we have unless something comes up. However, we will wait to hear from Miami about noise with the instrument operating on the A-side. Barnes commented that Chris Moeller looked at A-side before last November, and then the B-side after that, and that the B-side was quiet comparatively. Now, however, A-side looks almost as quiet as B-side. Xiong indicated that the new quietness in the A-side could be due to the new Vdet configuration.

With respect to instrument hardware configuration, Salomonson wondered about MCST's plans for the Vdet/Itwk configuration. The present setting is 190, and there will be some nighttime tests (looking at the infrared leak) and lunar tests of the 110 configuration in the next couple of weeks to see if it is better. Barnes said that unless it is dramatically different we probably wouldn't switch the configuration.

Salomonson asked if there were other hardware settings being adjusted. Barnes said there would be a gain change in Band 5 to minimize saturation in that band as was done before the instrument anomaly, and the thermal leak correction switch would be turned back on (in software), but that after that MCST had no more changes planned. Xiong reminded the group that these changes only affect bands 5-7 and 26. The thermal leak correction switch is off, but will be turned on after we get the nighttime data and determine whether new correction parameters will be necessary.

Murphy asked what the implications were for FM1. Roberto said that wasn't yet known. There are less radiation sensitive parts available now than those currently in the FM1 power supply (PS). Therefore, we could put in new parts that are more resistant to a high-energy radiation hit. The key piece of info the anomaly team doesn't yet have is how high a radiation hit the current MOSFET can take. That would tell us is whether the hit we took was a 25-year event or a more frequent occurrence. If it were a 25-year or longer event, the team would not likely recommend changes, since there are risks in taking the PS apart. The question is whether the risk of taking the PS apart is greater than the risk of losing two PSs in a single mission. Roberto also mentioned that given the difficulties the instrument had with the cold start, there might be recommendations for preventing the processors from getting cold.

FM1

Barnes reported that with respect to the Solar Diffuser Stability Monitor, it is beginning to look like we will have to go with what we have, as opposed to replacing the screen and changing the aperture, which is what we wanted to do. He anticipates resistance to taking the instrument apart after the thermal vacuum test is completed. We may not get enough improvement from the changes to justify them, and might still have to correct with a model.

2.2 GES DAAC UPDATE

Salomonson raised the issue of how data processing should proceed in the GES DAAC. Alcott indicated that the new LUTs are in place there and that, per the decision at the previous day's PI Processing meeting, the DAAC had begun processing day 192 and planned to continue going forward. Salomonson wondered whether we should keep pressing on or wait until L1B is stable, especially given the EDOS delivery problems.

Alcott indicated that the EDOS delivery problems were the result of an ftp server timing out before all files were sent, and so about 40% of files were arriving truncated. He said that from the DAAC's perspective, it would make sense to go through the days they have that are near complete and then go back after it everything with EDOS and the L1B are straightened out and find a way to go back and clean it all up.

Alcott reported that they are getting a patch from ECS for the ingest manager for staging reprocessing data. This will resolve a problem for S4PM, and helps MODAPS as well. Alcott indicated that the EDOS delivery problems might be network related. The data sets coming from EDOS look good; they just don't come over correctly.

2.3 MODAPS UPDATE

Masuoka reported first on MTVS1, which is handling the "forward processing". He reminded the group that by "forward processing" he means day 144-160, which runs from the start day of the consistent-year processing up to day 160, which is the end of the last 8-day period before MODIS shut off. This was to be the "real time" stream.

Currently the system is having trouble with some L2G granules, and Robert Wolfe and Nazmi El Saleous are looking into it. SDST expects a patch, but they will not delay past this evening (July 26). MODAPS will make the 8-day products and move on. The problems with Land Surface temperature have resolved themselves. They are putting in a patch to speed retrieval from archive.

Next Masuoka reported on the MTVS2 system, which is handling the reprocessing stream. That system is currently working on days 64-144. Production is essentially caught up with what DAAC has sent.

Salomonson presented an idea to the group about a modified strategy to the consistent year production scheme. He said that he was originally thinking they should prioritize every 8-day period from the time of first data collection and work through them. Others suggested that some products would be hurt by that approach (e.g. Oceans) and that it would be better to prioritize on a monthly basis. So he presented a chart on which he had blocked out several 32-day periods from 2000 and 2001, roughly falling in the months of March, June, September, and December. The month of June 2001 would be interrupted by the MODIS shut down, so for 2001, he suggested mid-May to mid-June instead.

Murphy indicated that we might want to check with climate modelers and pick those months that coincide with the canonical climate modeling months; he thought the months were January / April / July / October.

Salomonson said he knows that sampling the seasons is not a consistent record, which was one of MODIS's goals, but practically speaking, we need a prioritized strategy that makes attempts to optimize the processing given the resources we have and the concomitant performance. Hall reminded the group of discussion from previous years about picking various regions of the world and focusing production on those regions. Then for limited regions you would have a consistent record. Salomonson responded that one MODIS's prime objectives is global data collection. Masuoka indicated that MODAPS is better equipped to produce a month of everything (i.e., global) as it comes in from the DAAC than it is to pick selected regions. Alcott indicated that from the DAAC's perspective, they are already working on reprocessing, so switching back and forth between various months is no problem.

Masuoka indicated that his only real concern about doing these monthly segments is that to do them equally well for all disciplines, they would have to add in a week before and after the month for Oceans. They have the 8-day sliding window for cloud clearing which requires a week of data before and after. Vermote said he really liked the seasonal month idea, as it would also allows developers to assess their algorithms more rapidly, but that Salomonson might then be bombarded with requests for changes.

Salomonson indicated that with respect to algorithm changes, he had developed a list of points he wanted to see addressed in each developer's request for a code change, among them the necessity of the change; why it wasn't introduced earlier; a comparison of an 8- or 16-day period, or equivalent comparison of tiles to illustrate the benefit; and some indication that future changes are not contemplated for the reprocessing effort.

Ramsay suggested the possibility of using the NASA / NPP-provided near real time processing equipment to help MODAPS do some of this processing for a predetermined period of time, that is, limited to the forthcoming year. He indicated that NOAA is a year away from having the necessary communications line in place, per Gene Legg, Office of Satellite Data Processing and Distribution (OSDPD), to allow NOAA to make use of the processors for their ultimate purpose.

Also, the NASA / NPP-provided near real time processing equipment would need to have the MODIS data processing software installed and tested and thus the above suggestion is complementary to this requirement. Ramsay recommended that the issue be pursued with Ray Taylor, NPP Office, NASA / GSFC, as well as Marie Colton, Acting Director, Office of Research and Applications, and Helen Wood, Director, OSDPD. Masuoka indicated that the idea would definitely be worth pursuing. He thought there might be an issue

with the power supply and space layout for the processors. Murphy asked how long Masuoka thought it would take to get them up and running. He said two to three weeks if the power is not an issue, longer if it were. Alcott commented that he thinks they had decided they would be able to use the existing PDU.

Salomonson indicated that he is inclined to let MODAPS finish the day 64-160 segment of the reprocessing stream because MTVS2 seems to be on a roll. Then they would go back to December of 2000. However, that decision will be made carefully assuming that the days 64-160 reprocessing is accomplished soon. Masuoka said that using the NASA / NPP-provided near real time processors would allow us to immediately start the next segment of the reprocessing; i.e., December 2000. He indicated he would put together an email for Salomonson to review before he sent it on to Ramsay for distribution to Colton and Wood, among others.

2.4 GENERAL DISCUSSION
Hall commented that she had heard that Mark Fahnestock put together a MODIS 250-m mosaic for part of the western Antarctic.

Salomonson commented that Aqua Science Team Meeting is coming up, and he has been asked to point out any known changes in the validation plans. He asked the group if there were any known changes, and no knew of any.

Barnes reported that MCST would have final version of L1B caveats for their page tomorrow (July 27).

2.5 NOAA-NESDIS UPDATE
Ramsay reported a meeting with Levin Lauritson, Office of Satellite Data Processing and Distribution (OSDPD), in which Lauritson indicated Helen Wood, Director, OSDPD, was supportive of the use of MODIS data and imagery in wildfire suppression. The other item Ramsay reported was that Gary Ellrod, Office of Research and Applications, and Ramsay have proposed development of fused volcano product based on the MODIS 12 micron channel and GOES data, among other potential volcano products.

3.0 Action Items

3.1 Discipline leads to meet to resolve the issue of beta-release code and science-quality code, and what we need to say about it.
Status: Open.
3.2 Technical team to discuss further the issue of predicted ephemeris data and how to improve it.
Status: Open.